

REMARKS

In the Office Action dated August 23, 2007, the Examiner objected to phrases in Applicants' previous response identifying amendments in each of claims 17, 28 and 30. The Examiner's basis for this objection was not stated, and Applicants are unable to find any basis in the MPEP for objecting to this manner of presenting the claims. Nevertheless, the claims have been re-presented herein, with all of the changes as original language, and with each of the claims being designated as "previously presented."

Claims 17, 20, 20-29 and 30 were rejected under 35 U.S.C. §102(b) as being anticipated by Breiter et al. Claims 18 and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Breiter et al. in view of "Cornish-Fischer and Edgeworth Expansions".

These rejections are respectfully traversed for the following reasons.

Each of independent claims 1, 28 and 30 explicitly states that a plurality of signals are obtained from the spatially distributed neuronal areas of a subject, and a matchable coupling of *all* of the signals in the plurality of signals is formed, using matchable coupling variables that describe a statistical relationship between the signals that are matchably coupled.

In substantiating the rejection of these claims, the Examiner cited a number of paragraphs in the Breiter et al. reference, namely paragraphs [0010]-[0012], [0043] and [0045]. As the Examiner has noted, those paragraphs refer to correlating signals, but none of those paragraphs discloses or suggests forming a matchable coupling of *all* of the obtained signals. Moreover, the correlation discussed in those paragraphs is not a correlation based on a relationship, statistical or otherwise,

between signals in the plurality of signals, but is instead a correlation of the experimental process to brain activity. In other words, in the Breiter et al. reference, the signals themselves are not correlated with each other, but instead the goal is to find certain types of brain function activity that are, or can be, correlated with the obtained signals. Therefore, not only is the *concept* of correlation in the Breiter et al. reference not the same as set forth in the independent claims of the present application, but also, for that reason, it does not constitute a “matchable coupling” as set forth in those claims. There is thus no basis whatsoever for allegedly equating the “correlating” disclosed in the Breiter et al. reference with the “matchable coupling” of the independent claims of the present application. Moreover, as noted above, even the correlation that is disclosed in the Breiter et al. reference does not take place with regard to *all* of the signals.

Additionally, each of the independent claims explicitly states that respective probabilities for the occurrence of the signals based on a *higher order* statistical distribution of the occurrence of those signals is determined. Variables for the aforementioned “matchable coupling” then are optimized using these probabilities, i.e., probabilities based on a higher order statistical distribution. There is no disclosure or suggestion in the Breiter et al. reference to make use of a higher order statistical distribution for any purpose, much less for determining respective probabilities for occurrence of the signals, and then determining the aforementioned matchable coupling variables by optimizing such probabilities.

The Examiner cited a long string of paragraphs from the Breiter et al. reference as allegedly providing teachings in this regard, but did not identify any specific language in any of those paragraphs that the Examiner believes discloses a

“higher order statistical distribution.” Applicants submit that there is no such disclosure in the Breiter et al. reference. If the Examiner can identify specific language in any of the paragraphs cited by the Examiner that the Examiner believes provides such a disclosure, the Examiner is invited to do so. Applicants also note that paragraphs [0246], [0256] and [0257], which were cited by the Examiner, do not even exist in the Breiter et al. reference.

The use of higher order probabilities is not a trivial or insignificant insight into analyzing neuronal activities of a subject. A higher order statistical distribution provides a higher number of equations for a given number of unknown variables, thereby reducing the complexity, in terms of algorithms, of the given problem. The implementation of a higher order statistical distribution, moreover, is not an approach that, even given a general knowledge of higher order statistical distributions, can automatically be assumed to be useful or beneficial in the context of analyzing neuronal activities. Special consideration must be given to the “side effects” of undertaking this type of analysis, as explicitly described in the present specification at page 16, lines 14-15. This may possibly be why there is no mention whatsoever of the use of higher order statistical distributions, for any purpose, in the extensive Breiter et al. reference.

In summary, Applicants submit that the Breiter et al. reference does not disclose using matchable coupling variables that represent a matchable coupling of all of the signals that are obtained, and does not disclose or suggest determining probabilities of occurrences of the signals based on a higher order statistical distribution of the occurrence of those signals, and therefore does not disclose determining the matchable coupling variables by optimizing the aforementioned

probabilities that were obtained using a higher order statistical distribution. Applicants submit it is incorrect to equate the “correlation” that is disclosed in the Breiter et al. reference with the “matchable coupling” as claimed in the present application, but even if this were done (improperly, in the view of the Applicants), the “correlation” that is disclosed in Breiter et al. clearly does not take place using a higher order statistical distribution, as claimed in the present application.

The Breiter et al. reference, therefore, does not disclose all of the elements of claims 17, 20, 23-29 and 30 as arranged and operating in those claims, and thus does not anticipate any of those claims.

Dependent claims 18 and 19 provide examples of the “higher order statistical distribution” that is referred to in independent claim 17. The Examiner cited a document entitled “Cornish-Fisher and Edgeworth Expansions” as providing teachings of these types of higher order statistical distributions. Applicants obviously do not claim to have invented higher order statistical distributions, and therefore the mere fact that such distributions can be found in the mathematical or statistical literature is of no consequence to assessing the obviousness of the subject matter at claims 18 or 19, particularly in view of the arguments discussed above in connection with the independent claims. Merely having knowledge of these higher order statistical distributions does not provide any insight whatsoever as to whether they can be of benefit for analyzing neuronal activities. Moreover, as discussed above, even if a person of ordinary skill in the field of analyzing neuronal activities had the idea to use some type of higher order statistical distribution for analyzing neuronal activities, there is no reason for such a person to automatically believe that this could actually be accomplished, since the aforementioned secondary considerations still

would have to be taken into account. Only the present applicants not only have had the insight to recognize the benefit that can be obtained by using such higher order statistical distributions in the context of analyzing neuronal activities, but also have had the insight to describe a specific way of making beneficial use of those higher order statistical distributions, namely for the purpose of determining respective probabilities for the occurrence of signals that have been obtained, and then using those probabilities to determine matching coupling variables for matchable coupling of *all* of those signals. There is no disclosure or suggestion in either of the references cited by the Examiner of such a method of system for analyzing neuronal activity.

All claims of the application are therefore submitted to be in condition for allowance, and early reconsideration of the application is respectfully requested.

Submitted by,

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